

REMARKS

Entry of the foregoing and reconsideration of the application identified in caption as amended, pursuant to and consistent with the Rules of Practice in Patent Cases, and in light of the remarks which follow, is respectfully requested.

By the present amendment claims 1, 4 and 9 have been amended and claims 8 and 12 have been deleted so that claims 1-7, 9-11 and 14 will be pending upon entry of the present amendment.

Claims 1-12 and 14, now represented by claims 1-7, 9-11 and 14, stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,064,877 to Nass et al. ("Nass"). This rejection is respectfully traversed.

Nass discloses a process for the preparation of an organic polymer matrix in which an inorganic poly-condensate structure is anchored (column 8, lines 43 to 47). These polymers are prepared by reacting a compound of Formula (I) MR_n with an organic compound A followed by polymerization or polycondensation of the reaction product in the presence of water (column 1, line 66 to column 2, line 19). M is a metal and R is a radical which can be replaced by a complexing agent (column 2, lines 1 to 7). The reaction is said to proceed in two steps, firstly, compound A replaces one or more of radicals R. Secondly, water is added to replace all remaining R residues by hydroxyl groups, which are then subjected to a condensation reaction (column 6, line 58 to column 7, line 27).

The present invention is directed to dental materials having metal clusters according to general formula (I). The term "metal cluster" is well known in the art and refers to compounds having a bond between at least two metals. For the Examiner's convenience we enclose a copy of the textbook *Inorganic Chemistry* by Purcell and Kotz, printed in 1977. As can be seen from this textbook, metal clusters represent a well defined group of compounds. According to the formulas shown in this textbook, metal clusters are bridged and unbridged compounds with metal-metal bonds.

In contrast, as noted above Nass et al. disclose compounds which are prepared by reacting a compound of the formula MR_n (formula (I)) with at least one organic compound A followed by polymerization or polycondensation of the intermediate compounds. In these compounds the metal atoms M are connected together via oxygen bridges (column 2, lines 23 to 25 and column 7, lines 1 to 9 and 17 to 27). This document does not disclose metal clusters according to the present invention which requires metal-metal bonds. The fact that

Nass et al. do not use the term “cluster” to describe their compounds is consistent with this distinction..

Furthermore, it should be noted that the compounds of Nass et al. are the product of a polymerization of polycondensation reaction. These products take either the form of a 3-dimensional network (column 7, lines 10 to 12) or the form of metal oxide fibers (column 7, lines 28 to 31). Moreover, these polymeric products contain high numbers of metal atoms whereas the dental material of present claim 1 is restricted to clusters having 30 metal atoms or less. Thus, it follows that the compounds disclosed by Nass et al. differ from the clusters of the present invention in that they do not contain or suggest metal-metal bonds and in that they are polymeric compounds including significantly more metal atoms than the claimed clusters.

Accordingly, claims 1-7, 9-11 and 14 are not anticipated or obvious over the teachings of Nass for at least the reasons noted above. Withdrawal of the record rejection and allowance of the pending claims is respectfully requested.

Claims 1-7, 10, 12 and 14, now represented by claims 1-7, 10 and 14, stand rejected as being anticipated by the article by Schubert et al. This rejection is respectfully traversed.

Schubert et al. discloses two methacrylate clusters having the formulas $Zr_6(OH)_4O_4(OMC)_{12}$ and $Zr_4O_2(OMC)_{12}$. The subject matter of claims 8, 9 and 11 has not been rejected and thus is patentable over the teachings of Schubert et al.

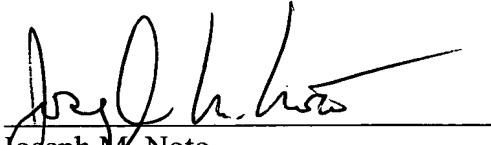
Schubert et al. describe the synthesis and characterization of two oxozirconium methacrylate clusters. However, Schubert et al. fails to disclose or suggest any practical applications of these clusters, let alone the combination of such clusters with one or more further polymerizable components. This has been confirmed by the Examiner's lack of rejection of the subject matter of claim 8 in view of Schubert et al., which subject matter has been incorporated in currently amended claim 1. Thus, it is not obvious from the teachings of Schubert et al. to combine clusters according to formula (I) with one or more further polymerizable compounds in order to produce improved dental materials.

Accordingly, claims 1-7, 10 and 14 are not anticipated by or obvious over the teachings of Schubert et al. for at least the reasons noted above. Withdrawal of the record rejection and allowance of the pending claims is respectfully requested.

In view of all of the foregoing, applicant submits that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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August 8, 2005

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Ruth R. Smith